

REMARKS/ARGUMENTS

This Amendment is submitted in response to the Office Action mailed June 11, 2007. The deadline for responding has been extended to December 11, 2007 by a request for an extension of time made herewith.

I. Introduction

Applicant hereby requests an interview prior to issuance of a new office action if the Examiner intends to persist in the rejection of any of the pending claims after reviewing this amendment. The Examiner is invited to contact Applicant's representative, Michael P. Straub by calling (732-542-9070) to schedule the interview.

New claims 61-79 have been added to add claims in different claim formats. Accordingly, claims 1-79 are now pending in the application.

In the Office Action the Examiner objected to the specification. In addition, the Examiner rejected claim 18 under 35 USC 112, second paragraph. Claim 18 has been amended to address and overcome the indefiniteness rejection while, as discussed below, it is believed that the specification is correct as it stands.

Claims 1-15, 17-21, 24, 25, 28-36, 38, 39, 41, 44-49, 51-57, 59 and 60 stand rejected for the reasons set forth in the office action.

Claims 16, 22, 23, 26, 27, 37, 40, 42, 43, 50 and 58 are objected to for depending from a rejected base claim, **but were indicated to be directed to allowable subject matter.** Applicants have rewritten claims 16, 22, 23, 26,

27, 37, 40, 42, 43, 50 and 58 in independent form. In view of the amendments to claims 16, 22, 23, 26, 27, 37, 40, 42, 43, 50 and 58 it is respectfully submitted that all of claims 16, 22, 23, 26, 27, 37, 40, 42, 43, 50 and 58 are now in condition for allowance.

As will be discussed below, none of the pending claims are anticipated or rendered obvious by the applied references.

II. The Objection to the Specification

The Examiner objected to the specification and suggested an amendment to page 18, line 28. Applicant has reviewed the portion of the specification cited by the Examiner and believe that components 516 and 518 are correctly identified. Accordingly, it is respectfully submitted that the specification is accurate and that the objection should be withdrawn.

III. The Rejection of claims Based on The Bohnke Patent

1. Brief discussion of Various Exemplary Embodiments

Various exemplary embodiments described in the present application are directed to using different components of a single tone signal to convey different types of information. The different components which are used may differ in phase by 90 degrees. In one such embodiment, the different signal components are an In-phase component and a Quadrature phase component.

The different components may be used to convey different control information intended for a wireless terminal or **each component may communicate information for a different wireless terminal**, e.g., with the In-phase component communicating control information for a first wireless terminal and the quadrature phase component communicating information for a second control information.

In various embodiments, the control information is modulated, at least for some control values, using phase modulation. In such a case, different phase values may indicate different operations to be performed. See for example Figure 6 which shows how a communicated command may assume a negative or positive value corresponding to a phase of 0 or 180 degrees. If the command falls in the positive region it is interpreted, e.g., as an increase power command but if it falls in the negative region it is interpreted as a decrease command. The use of phase to convey information in this manner facilitates accurate interpretation of the command particularly in cases where the gain between the base station may vary making amplitude modulation less reliable.

In addition to the use of phase modulation, in some embodiments a NULL signal may be used to communicate information, e.g., no change, in a system where three possible control values are to be supported.

In accordance with one exemplary embodiment, power control command signals are each transmitted on a single tone for a single symbol transmission time period. This is done in one exemplary orthogonal frequency division multiplexing (OFDM) embodiment. In accordance with one

such embodiment, the control symbols referred to as power control symbols, are analog signals including an in-phase and a quadrature component. Each component may be used to convey information. In one particular embodiment, in-phase component conveys a power control command for a first wireless terminal, while the quadrature component conveys a power control command for a second wireless terminal. While this embodiment uses both components to convey the same type of information to different wireless terminals it should be appreciated that the method can, and in some embodiments is, used to communicate control information to a single wireless terminal as noted above.

2. The Rejections Based on the Bohnke patent Should be Withdrawn

Claims 1, 2, 19 and 30 stand rejected under 35 USC §102(b) as being anticipated by US. Patent No. 6,160,791 to Bohnke. In addition, dependent claims 3, 4, 5-9, 10-15, 17, 20, 21, 24, 25, 28, 29, 31, 32-34, 35-36, 38, 39, 41, 44, 45, stand rejected as being obvious in view of the Bohnke patent when combined with one or more references as set forth in the office action. In the rejection of each of the claims in this set, the Bohnke patent serves as the principal reference in each of the obviousness rejections. By addressing the deficiencies of the Bohnke patent which are not made up for by the secondary references, Applicants respectfully submit they will address and overcome all of the rejections based on the Bohnke patent.

The independent claims which were rejected based on the Bohnke patent have been amended to clarify the claims. As amended, the claims clearly distinguish over the applied reference.

The Bohnke patent describes using amplitude modulation on subcarriers used to provide a phase reference thereby allowing a subcarrier to serve as a phase reference while communicating power control information through the use of amplitude modulation. (See abstract and col. 3, lines 7-26) The teaching of using amplitude modulation to communicate power control information on subcarriers which are used to provide a phase reference **does not in any way suggest using phase modulation on a tone to communicate control information in the manner recited in claim 1** particularly given that the subcarrier in the Bohnke patent is intended to serve as a phase reference.

Applicant notes that use of phase modulation to communicate control information on the phase reference subcarrier in the Bohnke patent would render the phase reference subcarrier in the Bohnke patent unsuitable for use for its intended purpose, i.e., as a phase reference carrier since the modulation would introduce variations into the phase component of the subcarrier. It should be appreciated that combining the approach in the Bohnke patent with one or more additional references would not result in anything close to the claimed subject matter.

Accordingly claim 1, as amended, is patentable because it recites:

A communications method for use in an orthogonal frequency division multiplexed system, the method comprising:
modulating, using phase modulation, first control information on a first component of a single tone to generate a first single tone control signal, said first single tone control signal including the first component and a second component, said first and second components having a phase

difference of 90 degrees, said second component communicating information which is separate from said first control information or being null; and

transmitting said first single tone control signal using said single tone during a single orthogonal frequency division multiplexed symbol transmission time period.

In view of the deficiencies of the primary reference, the Bohnke patent, it is respectfully submitted that the rejection of claim 1 and the claims which depend therefrom should be withdrawn. In addition it is respectfully submitted that the rejections of the other claims which are based on the Bohnke patent should be withdrawn for the same or similar reasons that the rejection of claim 1 should be withdrawn.

In view of the above remarks, it is respectfully submitted that all of the rejections based on the Bohnke patent should be withdrawn.

3. The Rejections Based on the Minami et al. patent Should be Withdrawn

Claims 46, 48, 49, 54, 56 and 57 stand rejected as being anticipated by U.S. Patent No. 6,587,510 to Minami et al. In addition, claims 47, 51, 52, 53, 55, 59 and 60 stand rejected as being obvious in view of the Minami et al patent when considered in combination with one or more other references.

The Minami et al. patent describes a system where both the I and Q components of a signal are used in combination to communicate a power control command. For example, see Figure 4, where a QAM signal is used to communicate Up,

Down or Hold. Note that in the example, a signal having power must be transmitted to communicate the Hold value and that the symbols used to communicate the Hold command do not occur on the line between the up and down commands. This is because the Minami et al. patent uses a combination of the I and Q components to communicate the commands. Accordingly, it should be appreciated that the Minami et al. patent teaches away from the use of a NULL signal to communicate control information. The secondary references do not make up for the deficiency of the Minami et al. reference in this regard.

As amended, claim 46 is patentable because it recites:

A method of operating a wireless terminal in an orthogonal frequency division multiplexed communications system, the method comprising:

periodically receiving control signals corresponding to said wireless terminal, each control signal having control information of a first type, corresponding to one of three different values, first and third ones of said three different values being communicated using phase, a second one of said three different values being communicated as a null value; and

determining an adjustment to be made based on whether a received control signal communicates a first, second or third value, said adjustment corresponding to the control information type.

All of the rejections based on the Minami et al. patent should be withdrawn for the same or similar reasons that the rejection of claim 46 should be withdrawn.

4. New Claims 61-79 are Patentable

New claims 61-69 are patentable for the same or similar reasons that claim 1 is patentable.

New claims 70-79 are patentable for the same or similar reasons that claim 46 is patentable.

IV. Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that the pending claims are in condition for allowance. Accordingly, it is requested that the Examiner pass this application to issue.

If there are any outstanding issues which need to be resolved to place the application in condition for allowance **the Examiner is requested to call (732-542-9070) and schedule an interview with Applicant's undersigned representative.** To the extent necessary, a petition for extension of time under 37 C.F.R. 1.136 is hereby made and any required fee in regard to the extension or this amendment is authorized to be charged to the deposit account of Straub & Pokotylo, deposit account number 50-1049.

None of the statements or discussion made herein are intended to be an admission that any of the applied references are prior art to the present application and Applicants preserve the right to establish that one or more of the applied references are not prior art.

Respectfully submitted,

December 11, 2007

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this paper (and any accompanying paper(s)) is being facsimile transmitted to the United States Patent Office on the date shown below.

Michael P. Straub

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Michael P. Straub
Signature

December 11, 2007
Date